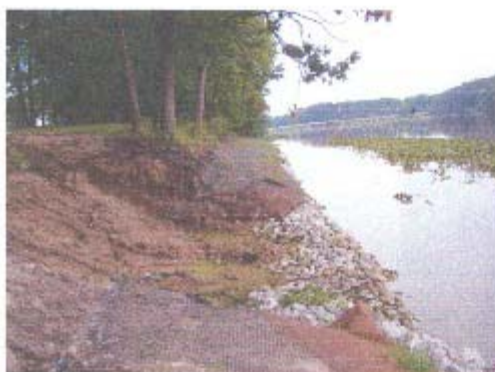


FRED ROSE PARK SHORELINE STABILIZATION PROJECT

**City of Hobart
Lake County Indiana**

January 2007



Prepared for:

**City of Hobart
414 Main Street
Hobart Indiana, 46342**

A. PROBLEM STATEMENT:

From original grant application. Maximum 5000 characters.

The most significant water quality problem in Lake George is excess sediment, much of it, from severely eroding shorelines. Four of 16 water quality concerns listed in the 2004 Deep River/Turkey Creek Watershed Management Plan dealt with sedimentation and erosion in Lake George. Lake George is a reservoir on Deep River, a primary tributary to the Little Calumet River. The embankments of the lake are eroding because of rapid water level fluctuations, highly erodible soils on the steep banks adjacent to the water, and wave action on these slopes. The vertical erosion faces along the windward shorelines are up to 12 feet high and the lake is advancing landward at up to 0.5 feet a year with mature oak trees falling into the water on a frequent basis. Mass failures of the slope are common, induced by toe-of-slope erosion.

B. BACKGROUND:

From original grant application. Maximum 5000 characters.

Lake George's parks (Jerry Pavese and Fred Rose), are significant contributors of non-point source sediment to the Deep River system. It was estimated that the two park's shorelines deliver more than 800 tons of per year of sediment to the waterway (540 tons from Fred Rose Park alone). This problem has been on-going since the formation of the lake 150 years ago. Del Rey silt loam soils are highly erosive when saturated by rapidly fluctuating water levels. In 2000, the City dredged 590,000 cubic yards of accumulated lake sediment. However, much of the sediment passes through the lake as suspended clays and enters the Little Calumet River and eventually Lake Michigan. Sediment reduction into Lake George from public shorelines was a priority recommended in the City's recent watershed management plan. Sediment inhibits recreational use of water bodies, interferes with aquatic life functions like reproduction and feeding, and often carries increased nutrient levels promoting eutrophication of the lake. Fred Rose Park's eroding shoreline is over 5,000 feet and funding by the City, LARE program, 319 grants program and the Great Lakes Sediment Control Program is expected to result in a completed construction project by the fall of 2006. The specific goal of this grant is to restore a minimum of 1250 feet of shoreline with bioengineering demonstration techniques. This effort will preserve the mature oaks on the bank top and will restore the state listed veiny pea's habitat and other plants in this historic prairie/oak savanna.

C. ACTIVITIES:

From proposed work on original grant application. Additionally, identify and explain any changes from original proposal. Maximum 5000 characters.

- 1) The goal was to stabilize the shoreline of Fred Rose Park on Lake George using bioengineering. The project successfully installed 4,440 lineal feet of bioengineered stabilization using two different techniques.
- 2) A second goal was to increase the habitat value of the riparian zone by establishing vegetation. The project included installation of a 5 to 30 foot wide native vegetation buffer along former vertically eroding slopes for 4,440 feet of shoreline. Native vegetation takes a minimum of three years to become established. This is year one, therefore much of the vegetation present is still cover crops that were mixed with the native seed. Additionally, shrubs were planted on four foot centers all along the shoreline. These shrubs will become habitat when they mature.
- 3) A third goal was to decrease the loss of mature oaks from the park shoreline. This has been accomplished as no trees have fallen into Lake George from the stabilized shoreline since project completion and none are in immediate danger of falling.
- 4) The final goal was to increase public awareness of erosion issues and environmentally friendly erosion control. We held a public participation day in which a dozen local residents participated. The design contractor has since followed up on two requests, and has had several more requests for assistance in stabilizing shorelines on private parcels around Lake George.

D. PROJECT RESULTS:

Maximum 5000 characters.

:

Fred Rose Park in Hobart Indiana was chosen for the implementation of this project due to the availability of the property as a public resource and the extensive severe erosion of its lakeshore. The BMP installed was bioengineering and was experimental for this region. The specific techniques demonstrated included a modified soil lift on a rock toe and a pre-vegetated coir log roll installation with turf-reinforcement mat on the backfill behind the coir log. The techniques were specifically designed for this site to deal with the highly fluctuating water levels, nutrient rich water, potential depredation by wildlife on new plantings, and finally significant use of the shoreline by local residents (bank fishing).

Project funding was sought from two federal sources, a state grant, and local Park bonds in order to install a project that would be significant enough to make a long term difference in the water quality. The total project ended up costing in excess of \$613,000.

The project resulted in the stabilization of 4,440 feet of Lake George shoreline within Fred Rose Park. The project costs were shared between state and federal grant sources as well as the required local match. The bioengineered shoreline stabilization measures installed should get stronger with each passing year as the native prairie grasses and shrubs become mature and the roots penetrate the new embankment. As these same plants mature, the need for shoreline maintenance will decrease and habitat values will increase. The public participated in a 1/2 day workshop on bioengineering at the construction site, which led to several contacts for private bank stabilization work in the same area. An article was written by the design contractor and published in Land and Water, a nationwide publication of the erosion control industry.

The native seed installed in the backfill is dominated by prairie grasses including big and little bluestem, Indian grass, switch grass, and side oats grama. However, over 30 native forb species were included in the mix. The Park Department has responsibility to maintain the park and have agreed to perform annual mowing of the weedy species that will try to dominate the site for the first few years (ragweed, pokeweed, and thistle are the likely dominants). However, once the native grasses and forbs take root, no maintenance should be required. The coir logs were pre-planted with native emergent wetland plants including sedges, rushes, cord grass, rose mallow, lobelias, burreed, iris, and buttonbush. The plants were all surviving three months after installation, and if the opposite shoreline is any indicator (Jerry Pavese Park had the same coir log treatment in 2005) they will do really well because of the nutrient rich water. On the Jerry Pavese Park side of Lake George the vegetation had completely taken over the coir logs with robust plants as high as 2.5 feet after one full growing season.

The project area experienced an unusually heavy precipitation during the construction from June through November. This caused problems on the compacted backfill with erosional rills developing even with erosion control blankets in place, areas devoid of seed due to water flow through and under erosion control blankets, and toward the project end, a mass failure of the slope along 80 feet, that had to be fixed by the contractor. In the latter case, it was a failure by the contractor to follow the specifications for embankment construction that allowed the mass failure to occur.

The techniques developed for this project will be used to stabilize other private and public sections of the shoreline within the city of Hobart. The City is currently working on grant applications to install another 1200 feet around the School City of Hobart's property adjacent to Fred Rose Park.

The Project completed at Lake George was sponsored by the City of Hobart. They received the following grants for this project.

LARE Grant from 2003	\$ 918
LARE Grant from 2004	\$100,000
LARE Grant from 2005	\$ 50,000
IDEM 319 Grant	\$108,000
Great Lakes Sediment Grant	\$100,000
Lake Michigan Coastal Grant	<u>\$100,000</u>
Total Grants	\$458,918
City of Hobart	\$153,975
Total Cost of Project	\$612,893







Section III: BMP Installation

1) Why was the specific location of the installation chosen over other potential locations? Check all that apply. Please explain in the **Results** section, IID.

- ☒ **Best Fit** ☒ **Priority Area** ☒ **Willing Landowner** ☐ **No other potential site**

2) Were contacts were made with the landowner/user before this site was chosen?

- ☒ **Yes** ☐ **No**

3) Was this practice an experimental practice or an emerging practice that could not funded by existing Federal, state or local governments? In the **Results** section (IID), detail how this new practice was developed.

- ☒ **Yes** ☐ **No**

4) What factors were considered in choosing the materials/equipment for this installation? Explain in the **Results** section, IID.

- ☒ **Esthetics** ☒ **Long life** ☐ **Cheapest** ☐ **Only Available**

5) If a plant material was used was it native to the area?
If yes, provide a detailed list in the **Results** section, IID.

- ☒ **Yes** ☐ **No**

6) Were there any official provisions made to maintain this BMP(s)?
Explain why or why not in the **Results** section, IID.

- ☒ **Yes** ☐ **No**

7) Have you had to go back and do any reconstruction/maintenance on the BMP(s)? If yes, explain in the **Results** section (IID) what had to be reconstructed/maintained, and why.

- ☒ **Yes** ☐ **No**

8) Would you install this BMP again?

If no, provide a detailed list in the **Results** section, IID.

- ☒ **Yes** ☐ **No**

9) Did you do a site tour? (Check all that apply.)

- ☐ **Before construction** ☒ **During construction** ☐ **After construction**

10) Are you planning any future activities that involve this BMP?
If yes, provide a detailed list in the **Results** section, IID.

- ☒ **Yes** ☐ **No**

11) Was the location of this BMP within a watershed that has, or is in the process of developing, a watershed plan?

- ☒ **Yes** ☐ **No**

Section IV: INFORMATION / EDUCATION

WORKSHOP/CONFERENCES

1) If you organized an event/workshop, how did you attract your target audience? Check all that apply.
Describe how you designed your event/workshop curriculum in the **Results** section, IID.

- | | | |
|---|--------------------------------------|----------------------------------|
| <input checked="" type="checkbox"/> Direct Mail | <input type="checkbox"/> Radio | <input type="checkbox"/> TV |
| <input checked="" type="checkbox"/> News articles | <input type="checkbox"/> Newsletters | <input type="checkbox"/> Posters |

2) If you organized a media campaign as part of your Information/Education project, how did you interact with the local media? Check all that apply.

- | | |
|---|--|
| <input type="checkbox"/> Press Conference | <input checked="" type="checkbox"/> Direct Contact |
| <input type="checkbox"/> Mailings | <input type="checkbox"/> Press invited to event |

3) Was the campaign successful?

- ☒ Yes ☐ No

INFORMATION AND EDUCATIONAL MATERIAL

4) What type of material was developed as part of your project? Check all that apply.

- | | | | |
|--|----------------------------------|-------------------------------------|--------------------------------|
| <input checked="" type="checkbox"/> Brochure | <input type="checkbox"/> Manual | <input type="checkbox"/> Fact Sheet | |
| <input type="checkbox"/> Curriculum | <input type="checkbox"/> Posters | <input type="checkbox"/> CD | <input type="checkbox"/> Video |

5) Did you develop a slide or power point type presentation? If yes, you should submit it in Step 3, after submitting this form and entering BMP data.

- ☐ Yes ☒ No

6) Are any of these materials available on-line? If yes, submit links in Step 3 (after submitting this form and entering BMP data).

- ☐ Yes ☒ No

7) How did you deliver this material?

- | | |
|---|---|
| <input type="checkbox"/> On-line | <input type="checkbox"/> Direct Mail |
| <input checked="" type="checkbox"/> Handout (mtgs./conferences) | <input checked="" type="checkbox"/> Handout (in-office) |

VOLUNTEERS

8) Did you use volunteers for any portion of your project? If yes, give a detailed description in the **Results** section, IID.

- ☐ Yes ☒ No

9) If yes, how many people volunteered for your projects, and how many hours did volunteers contribute?

- | | |
|--------------------------------|------------------------------------|
| <u>Number of Volunteers</u> | <u>Number of Hours</u> |
| <input type="checkbox"/> 1-10 | <input type="checkbox"/> 1-50 |
| <input type="checkbox"/> 11-20 | <input type="checkbox"/> 51- 100 |
| <input type="checkbox"/> 21-30 | <input type="checkbox"/> 101 - 500 |
| <input type="checkbox"/> 31+ | <input type="checkbox"/> 501+ |

10) What groups were the volunteers associated with? Check all that apply.

- | | | |
|---|---|--|
| <input type="checkbox"/> Private Citizens | <input type="checkbox"/> Civic groups | <input type="checkbox"/> Scouting groups |
| <input type="checkbox"/> Business groups | <input type="checkbox"/> Environmental groups | <input type="checkbox"/> Academic groups |

Submit Form